REMARKS

Applicant respectfully requests the Examiner to reconsider and again examine the claims in view of the following remarks.

Claims 1 to 41 are pending in the application. Claims 1 to 41 are rejected.

The Rejections under 35 U.S.C. §102(e)

The Examiner rejects Claims 1, 3, and 22 under 35 U.S.C. §102(e) as being anticipated by Bobrow et al. (U.S. Patent number 6,562,077).

Applicant submits that Claim 1 is patentably distinct over Bobrow et al., since the cited reference neither describes nor suggests "...a processor coupled to said display and operable to identify at least a first cluster of overlapping labels on said display, and operable to calculate new display coordinates for at least one label in said cluster and to move said label in accordance with said new display coordinates... ," as set forth in Claim 1. With this particular arrangement, the present invention identifies labels on a computer display that lay on top of each other and is operable to move the labels to avoid the overlap.

In contrast, Bobrow et al. teaches a document search system that enables a user to search a corpus of documents by specifying genres, layout objects, and/or attributes of the documents. According to Bobrow et al., at column 5, lines 36-54:

> "In accordance with the invention there is provided a system, and method and article of manufacture therefor, for sorting document images stored in a memory. The document images are sorted by segmenting each document image recorded in the memory into a set of layout objects. Each layout object in the set of layout objects of each document is one of a plurality of layout object types, and each of the plurality of layout object types identify a structural element of a document image. A feature of a document is selected from a set of features, where each of the features in the set of features identify a selected group of layout objects in certain of the sets of layout objects recorded in the memory [empahsis

> added]. A set of image segments is assembled in the memory [empahsis added]. Each image segment in the set of image segments identifies those layout objects of a document image stored in the memory that form the selected feature. The assembled image segments are sorted into clusters in the memory [empahsis added], where each cluster defines a grouping of image segments that have similar layout objects forming the selected feature. "

With Bobrow et al., a user can find documents within the corpus of documents, for example, in a "genre" of business letters, having a "layout object" corresponding to a business address, the layout object having an attribute corresponding to a position in the upper left hand side of the document. To this end, as best understood by the Applicant, Bobrow et al. can identify, for example, documents within the corpus of documents within a particular genre and having similar text box layout objects at similar locations. However, unlike the labels of the present invention, Applicant submits that the text box layout objects of Bobrow et al. do not overlap as claimed since they exist in different documents stored in memory.

Furthermore, Bobrow et al. fails to describe or suggest the claimed labels. Labels are described in the specification, for example, at page 9, lines 26-27 as "...two-dimensional labels that are associated with certain graphical objects in an interactive computer graphics display... ." Thus, a label is a two-dimensional graphical object, for example a text box, associated with another graphical object, for example, an icon, on a computer display. For example, Figure 2 shows a label 25 associated with an aircraft icon 20. The Bobrow et al. text box layout objects do not constitute the claimed labels.

Still further, Applicant submits that Bobrow et al. fails to teach the claimed clusters. A cluster is described in the specification, for example, at page 16, lines 13-15 "... as a group of aircraft icons that transitively overlap each other, or alternatively as a group of aircraft icons and graphical object icons that overlap each other." Also, at page 17, lines 13-18 "...cluster lists may not include all of the visible aircraft. For example, if an aircraft does not overlap another aircraft or graphical object, and it itself is not overlapped by another aircraft or graphical object, then, in the present embodiment, it will not exist in a cluster and its label position will not be moved. This feature of the present embodiment allows the system to avoid moving labels that are not

currently causing any problems, thus minimizing user distraction." Also, at page 10, lines 17-19 it is described that "...it is to be appreciated that the interchangeable use of the terms 'aircraft icon', 'icon' or 'aircraft', can mean a symbol representative of an aircraft and/or its label." Thus, a cluster is a group of graphical objects that overlap on a computer display, which can be icons and/or labels. In contrast, Bobrow uses the term clusters to mean "a grouping of image segments that have similar layout objects forming the selected feature." (column 5, lines 52-54) Furthermore, the clusters of Bobrow et al. are in a memory (see, for example, column 5, line 52), not on a computer display as claimed.

Yet further, Bobrow et al. fails to teach the claimed processor operable to identify overlapping labels on a display and to move at least one of the labels in accordance with new display coordinates in order to avoid the overlap. The corpus of documents described by Bobrow et al. is stored in a memory and is not on a computer display.

In view of the above, Applicant submits that Claim 1 is patentably distinct over Bobrow et al.

For substantially the same reasons discussed above in conjunction with Claim 1, Applicant submits that independent Claim 3 is patentably distinct over Bobrow et al., since the cited reference neither describes nor suggests "...means for identifying at least a first cluster of overlapping labels; means for calculating new display coordinates for at least one label in said cluster; and means for moving said label in accordance with said new display coordinates," as set forth in Claim 3.

For substantially the same reasons discussed above in conjunction with Claim 1, Applicant submits that independent Claim 22 is patentably distinct over Bobrow et al., since the cited reference neither describes nor suggests "...identifying at least a first cluster of overlapping labels and graphical elements; calculating new display coordinates for at least one label in said cluster; and moving said label in accordance with said new display coordinates," as set forth in Claim 22.

In view of the above, Applicant submits that the rejection of Claims 1, 3, and 22 under 35 U.S.C. §102(e) should be removed.

The Rejections under 35 U.S.C. §103(a)

Bobrow et al. in View of Syeda-Mahmood and Roy

The Examiner rejects Claims 2, 4-5, 8-9, 23-24, and 27 under 35 U.S.C. §103(a) as being unpatentable over Bobrow et al. in view of Syeda-Mahmood (U.S. Patent number 6,507,838) and Roy (U.S. Patent number 6,295,517).

Claims 2, 4-5, and 8-9 depend from and thus include the limitations of independent Claim 1. Claims 23-24 and 27 depend from and thus include the limitations of independent Claim 22. Thus, Applicant submits that Claims 2, 4-5, 8-9, 23-24, and 27 are patentably distinct over the cited references at least for the reasons discussed above in conjunction with independent Claims 1 and 22. Accordingly, Applicant submits that the rejection of Claims 2, 4-5, 8-9, 23-24, and 27 under 35 U.S.C. §103(a) should be removed.

Bobrow et al. in View of Syeda-Mahmood, Roy, and Sagawa et al.

The Examiner rejects Claims 6-7 and 25-26 under 35 U.S.C. §103(a) as being unpatentable over Bobrow et al. in view of Syeda-Mahmood, further in view of Roy, and further in view of Sagawa et al. (U.S. Patent number 5,963,731).

Claims 6-7 depend from and thus include the limitations of independent Claim 1. Claims 25 and 26 depend from and thus include the limitations of independent Claim 22. Thus, Applicant submits that Claims 6-7 and 25-26 are patentably distinct over the cited references at least for the reasons discussed above in conjunction with independent Claims 1 and 22. Accordingly, Applicant submits that the rejection of Claims 6-7 and 25-26 under 35 U.S.C. §103(a) should be removed.

Bobrow et al. in View of Deering

The Examiner rejects Claims 10 and 29 under 35 U.S.C. §103(a) as being unpatentable over Bobrow et al. in view of Deering (U.S. Patent number 6,525,723).

Claim 10 depends from and thus includes the limitations of independent Claim 1. Claim 29 depends from and thus includes the limitations of independent Claim 22. Thus, Applicant submits that Claims 10 and 29 are patentably distinct over the cited references at least for the reasons discussed above in conjunction with independent Claims 1 and 22. Accordingly, Applicant submits that the rejection of Claims 10 and 29 under 35 U.S.C. §103(a) should be removed.

Bobrow et al. in View of Prakriya et al.

The Examiner rejects Claims 11 and 30 under 35 U.S.C. §103(a) as being unpatentable over Bobrow et al. in view of Prakriya et al. (U.S. Patent number 6,154,220). As an initial matter, Applicant notes that the U.S. Patent number for Prakriya et al. provided by the Examiner appears to be incorrect, and is correctly indicated above.

Claim 11 depends from and thus includes the limitations of independent Claim 1. Claim 30 depends from and thus includes the limitations of independent Claim 22. Thus, Applicant submits that Claims 11 and 30 are patentably distinct over the cited references at least for the reasons discussed above in conjunction with independent Claims 1 and 22. Accordingly, Applicant submits that the rejection of Claims 11 and 30 under 35 U.S.C. §103(a) should be removed.

Bobrow et al. in View of Higgins et al.

The Examiner rejects Claims 12 and 31 under 35 U.S.C. §103(a) as being unpatentable over Bobrow et al. in view of Higgins et al. (U.S. Patent number 5,307,455).

Claim 12 depends from and thus includes the limitations of independent Claim 1. Claim 31 depends from and thus includes the limitations of independent Claim 22. Thus, Applicant

submits that Claims 12 and 31 are patentably distinct over the cited references at least for the reasons discussed above in conjunction with independent Claims 1 and 22. Accordingly, Applicant submits that the rejection of Claims 12 and 31 under 35 U.S.C. §103(a) should be removed.

Bobrow et al. in View of Syeda-Mahmood, Roy, and Madden et al.

The Examiner rejects Claims 13-14, 17, 20, 32-33, 36, 39, and 41 under 35 U.S.C. §103(a) as being unpatentable over Bobrow et al. in view of Syeda-Mahmood, further in view of Roy, and further in view of Madden et al. (U.S. Patent number 6,091,424). With regard to Claim 13, the Examiner asserts that Bobrow et al. discloses an apparatus for positioning labels among graphical elements on a computer display, and further asserts that Bobrow et al. teaches means for sequentially selecting labels from among a plurality of labels on the display. The Examiner suggests that Bobrow et al. fails to disclose means for testing each of said selected labels for overlap with other labels and graphical elements in the display, means for accumulating an overlap score for each of said selected labels, means for generating a list of other labels and graphical elements that overlap each of said selected labels, means for comparing a plurality of said lists and accumulating cluster lists of overlapping labels and graphical elements, means for sorting a plurality of said cluster lists according to the number of entries in each, means for calculating new display coordinates for the labels on a cluster by cluster basis, means for comparing on a cluster by cluster basis, the degree of overlap of labels and graphical elements with said new display coordinates and the existing degree of overlap of labels and graphical elements, and if the new coordinates result in a reduction of the degree of overlap, means for moving the graphical elements to new positions according to said calculated display coordinates.

The Examiner relies upon Syeda-Mahmood to teach the claimed means for testing each of said selected labels for overlap with other labels and graphical elements in the display, means for accumulating an overlap score for each of said selected labels, means for generating a list of other labels and graphical elements that overlap each of said selected labels, and means for comparing a plurality of said lists and accumulating cluster lists of overlapping labels and graphical elements. The Examiner relies upon Roy to teach the claimed means for sorting a plurality of said cluster lists according to the number of entries in each. The Examiner relies

upon Madden to teach the claimed means for calculating new display coordinates for the labels on a cluster by cluster basis, means for comparing on a cluster by cluster basis, the degree of overlap of labels and graphical elements with said new display coordinates and the existing degree of overlap of labels and graphical elements, and if the new coordinates result in a reduction of the degree of overlap, means for moving the graphical elements to new positions according to said calculated display coordinates. The Examiner concludes that it would have been obvious to one of ordinary skill in the art to incorporate into Bobrow et al., Syeda-Mahmood's label-processing features, Roy's sorting capability, and Madden's reassignment of label locations.

Applicant respectfully disagrees and submits that Bobrow et al., whether taken alone or in combination with Syeda-Mahmood, Roy, and Madden, neither describes nor suggests "... sequentially selecting labels from a plurality of labels on the display; [and] ...testing each of said selected labels for overlap with other labels and graphical elements in the display... ," as set forth in independent Claims 13 and 32.

As described above, Bobrow et al. teaches a document search system that enables a user to search a corpus of documents by specifying genres, layout objects, and/or attributes of the documents. With Bobrow et al. a user can find documents within the corpus of documents, for example, in the genre of business letters, having a layout object corresponding to a business address, the layout object having an attribute corresponding to a position in the upper left hand side of the document. However, unlike the labels of the present invention, Applicant submits that the text box layout objects of Bobrow et al. do not overlap as claimed since they exist in different documents stored in memory. Furthermore, for reasons discussed above, Bobrow et al. fails to describe or suggest the claimed labels.

Applicant submits that Syeda-Mahmood fails to overcome the above deficiencies in Bobrow et al. and also fails to teach the additional claimed features that the Examiner attributes to its teaching. Syeda-Mahmood describes a method and system for searching multimedia data, which does not include the claimed overlapping labels on a computer display. Furthermore, the

Examiner refers to column 2, lines 1-17 of Syeda-Mahmood as describing the claimed testing each of said selected labels for overlap with other labels, accumulating an overlap score, generating a list of other labels and graphical elements, and comparing a plurality of said lists and accumulating cluster lists. According to Sayeda-Mahmood at column 2, lines 1-17,

> "A method of searching multi-media data having different modes using a query, the method including processing the multi-media data to extract relevance scores and time reference points of matches to individual media modes, identifying overlapping time periods when two or more of the modal matches correspond to the query, and ranking a relevance of the overlapping time periods. The ranking includes finding an overlapping time period having a highest relevance score, segmenting the overlapping time period to identify beginning and ending events, calculating a relevance distribution based on a frequency of occurrence of the query in a time period, and finding a largest number of different modes of overlap. The modes include two or more of audio, video, text, and graphic display. The query can have an input mode based on any of the modes and the method further includes outputting results of the query in a mode consistent with the input mode."

Contrary to the Examiner's above assertions, Applicant cannot find the claimed testing each of said selected labels for overlap with other labels, accumulating an overlap score, generating a list of other labels and graphical elements, or comparing a plurality of said lists and accumulating cluster lists in Syeda-Mahmood. In contrast, Syeda-Mahmood describes searching multimedia data for overlapping time periods and assigning a relevance score associated with the time overlap.

Applicant submits that Roy also fails to overcome the above deficiencies in Bobrow et al. and also fails to teach the additional claimed features that the Examiner attributes to its teaching. Roy describes a simulation architecture and method (Abstract), which does not include the claimed overlapping labels on a computer display. Furthermore, the Examiner relies on column 8, lines 35-48 of Roy as teaching the claimed sorting a plurality of said cluster lists, which states:

> "As part of Default Clustering 104, once the initial clusters are identified, a topological sort of the cluster graph is performed in order to assign a level number to each cluster. Levelization is accomplished as follows. Clusters with primary inputs are assigned a level of zero. Any other cluster is assigned a level one higher than the maximum level of any cluster driving one of its inputs. For each clock cycle of a clock line, all clusters having that clock line, regardless of whether the cluster is oblivious-triggered cycle-based or event-triggered cycle-

> based, are evaluated in ascending levelization order. Levelization is performed purely for efficiency purposes. It ensures that a cluster is evaluated only once after all of the inputs which might affect that particular evaluation have changed."

The claimed "cluster," as noted above, is described, for example, at page 16, lines 13-14 to be "... a group of aircraft icons that transitively overlap each other, or alternatively as a group of aircraft icons and graphical object icons that overlap each other." Contrary to the Examiner's assertions, Applicant cannot find the claimed sorting a plurality of said cluster lists in Roy. Roy describes a cluster to be "... a region of the circuit which has uniform simulation activity," (abstract) not a group of graphical objects on a computer display as in the present invention.

Applicant submits that Madden also fails to overcome the above deficiencies in Bobrow et al. and also fails to teach the additional claimed features that the Examiner attributes to its teaching. Madden begins with a map on a graphical display, which is constructed first into a matching graph and then decomposed into an overlap graph, neither of which are displayed on a computer display as claimed. For example, at column 7, lines 64-67, Madden states:

> "Hence, the main steps for reducing the complexity of the GFLP problem are (a) the construction of the overlap graph, and (b) the reduction of the overlap graph to the matching graph."

As best understood by the Applicant, the "matching graph" (e.g., FIG. 4) of Madden is a particular type of graph, which is algorithmically constructed but which is not displayed on a computer display, where one side has icon nodes representing graphical features, G, (e.g., aircraft icons, i.e., the icons to be labeled) associated with a displayed graph, and the other side has label placement nodes representing all potential label placements (forming a set Q) associated with the graphical features. A line (edge) connecting an icon node to a label placement node represents a possible label placement associated with the icon node to which the line connects. In particular, edges (or lines) of the matching graph form a set Q (which classifies all potential label placements into groups of overlapping labels defined by a relation, R, described more fully below). Unlike the claimed invention which sequentially selects actual labels and tests for label overlaps on a computer display, Madden begins with a set of all possible

label placements in the matching graph (which is not displayed) and selects particular label placements as further described below.

The matching graph of Madden is simplified to provide an "overlap graph," having edges forming a set W (smaller than the set Q), also not displayed on a computer display, for which each aircraft icon node preferably has only one edge extending to a label placement node. Therefore, the one edge represents a single position at which to place an associated label. The best solution to simplify the matching graph and provide the overlap graph is a "maximum cardinality, minimum weight" solution which essentially means a solution capable of labeling as many aircraft icons as possible with a non-overlapping label (i.e. maximum cardinality) while minimizing a cost associated with chosen labels (as computed by a cost function). (see, for example, Madden, at column 5, line 64).

Madden describes clusters to be two-dimensional polygonal areas in a graph, which are not displayed on a computer display. For example, in describing Figures 6-6c, at column 10, lines 1-10, Madden states:

> "Given an input graph G, if the layout of G is planar (i.e, has no edge crossings), then the faces of that planar graph are the "clusters" of G. If the layout has crossings, then a planar graph Gclusters is constructed by introducing for each crossing a virtual node. The resulting graph is planar, and the faces of Gclusters are the clusters of G. FIG. 6(a) shows the layout of an original graph G. FIG. 6(b) shows a graph Gclusters which has been obtained from G by introducing virtual nodes, which are denoted by squares. Finally, in FIG. 6(c), the shaded regions are the clusters of G."

Figures 6a, 6b, and 6c show a graph having Madden's clusters as crosshatched regions. Figure 6a has seven nodes, which are icon nodes associated with icon graphical objects and label placement nodes associated with label placements. Edges between pairs of nodes correspond to label positions. In Figure 6b, virtual nodes are added (the black squares) at the line intersections. In Figure 6c, clusters, as used by Madden, are polygonal regions bounded by the nodes and edges. There are seven different clusters in Figure 6c. Thus, clusters as used by Madden are merely regions on the graph.

Applicant submits that the meaning of clusters as used by Madden is significantly different than used in the claimed invention. Madden's clusters are polygonal regions associated solely with objects on a graph, which is not displayed. In contrast, clusters of the present invention are associated with labels and/or icons, in particular labels and/or icons that are actually or transitively overlapping on a graphical display.

Furthermore, as described above, the Examiner relies upon Madden to teach the claimed calculating new display coordinates for the labels on a cluster by cluster basis, comparing on a cluster by cluster basis, the degree of overlap of labels and graphical elements with said new display coordinates and the existing degree of overlap of labels and graphical elements, and if the new coordinates result in a reduction of the degree of overlap, moving the graphical elements to new positions according to said calculated display coordinates. As described above, Applicant submits that Madden does not move graphical elements as claimed. Rather, Madden begins with a set of all possible label placements in a matching graph, which is not displayed, and statically selects from the set of all possible label placements to provide label placements on an overlap graph, which is also not displayed, to arrive at label positions for a displayed graph.

In view of the above, Applicant submits that independent Claims 13 and 32 are patentably distinct over Bobrow et al., whether taken alone or in combination with Syeda-Mahmood, Roy, and Madden.

Claims 14, 17, and 20 depend from and thus include the limitations of independent Claim 13. Claims 33, 36, 39, and 41 depend from and thus include the limitations of independent Claim 32. Thus, Applicant submits that Claims 14, 17, 20, 33, 36, 39, and 41 are patentably distinct over the cited references at least for the reasons discussed above in conjunction with independent Claims 13 and 32.

Accordingly, Applicant submits that the rejection of Claims 13-14, 17, 20, 32-33, 36, 39, and 41 under 35 U.S.C. §103(a) should be removed.

Bobrow et al. in View of Syeda-Mahmood, Roy, Madden et al., and Sagawa et al.

The Examiner rejects Claims 15-16 and 34-35 under 35 U.S.C. §103(a) as being unpatentable over Bobrow et al. in view of Syeda-Mahmood, further in view of Roy, further in view of Madden et al., and further in view of Sagawa et al.

Claims 15-16 depend from and thus include the limitations of independent Claim 13. Claims 34-35 depend from and thus include the limitations of independent Claim 32. Thus, Applicant submits that Claims 15-16 and 34-35 are patentably distinct over the cited references generally for the reasons discussed above in conjunction with independent Claims 13 and 32. Accordingly, Applicant submits that the rejection of Claims 15-16 and 34-35 under 35 U.S.C. §103(a) should be removed.

Bobrow et al. in View of Syeda-Mahmood, Roy, Madden et al., and Deering

The Examiner rejects Claims 18 and 37 under 35 U.S.C. §103(a) as being unpatentable over Bobrow et al. in view of Syeda-Mahmood, further in view of Roy, further in view of Madden et al., and further in view of Deering.

Claim 18 depends from and thus includes the limitations of independent Claim 13. Claim 37 depends from and thus includes the limitations of independent Claim 32. Thus, Applicant submits that Claims 18 and 37 are patentably distinct over the cited references generally for the reasons discussed above in conjunction with independent Claims 13 and 32. Accordingly, Applicant submits that the rejection of Claims 18 and 37 under 35 U.S.C. §103(a) should be removed.

Bobrow et al. in View of Syeda-Mahmood, Roy, Madden et al., and Prakriya et al.

The Examiner rejects Claims 19 and 38 under 35 U.S.C. §103(a) as being unpatentable over Bobrow et al. in view of Syeda-Mahmood, further in view of Roy, further in view of Madden et al., and further in view of Prakriya et al.

Claim 19 depends from and thus includes the limitations of Claim 13. Claim 38 depends from and thus includes the limitations of Claim 32. Thus, Applicant submits that Claims 19 and 38 are patentably distinct over the cited references generally for the reasons discussed above in conjunction with independent Claims 13 and 32. Accordingly, Applicant submits that the rejection of Claims 19 and 38 under 35 U.S.C. §103(a) should be removed.

Bobrow et al. in View of Syeda-Mahmood, Roy, Madden et al., and Higgins et al.

The Examiner rejects Claims 21 and 40 under 35 U.S.C. §103(a) as being unpatentable over Bobrow et al. in view of Syeda-Mahmood, further in view of Roy, further in view of Madden et al., and further in view of Higgins et al.

Claim 21 depends from and thus includes the limitations of independent Claim 13. Claim 40 depends from and thus includes the limitations of independent Claim 32. Thus, Applicant submits that Claims 21 and 40 are patentably distinct over the cited references generally for the reasons discussed above in conjunction with independent Claims 13 and 32. Accordingly, Applicant submits that the rejection of Claims 21 and 40 under 35 U.S.C. §103(a) should be removed.

Bobrow et al. in View of Madden et al.

The Examiner rejects Claim 28 under 35 U.S.C. §103(a) as being unpatentable over Bobrow et al. in view of Madden et al.

Claim 28 depends from and thus includes the limitations of independent Claim 22. Thus, Applicant submits that Claims 28 is patentably distinct over the cited references generally for the reasons discussed above in conjunction with independent Claim 22. Accordingly, Applicant submits that the rejection of Claim 28 under 35 U.S.C. §103(a) should be removed.

In view of the above, Applicant submits that Claims 1-41 and the entire case are in condition for allowance and should be sent to issue and such action is respectfully requested.

The Examiner is respectfully invited to telephone the undersigning attorney if there are any questions regarding this Response or this application.

The Assistant Commissioner is hereby authorized to charge payment of any additional fees associated with this communication or credit any overpayment to Deposit Account No. 500845.

Respectfully submitted,

Dated: June 3, 2004

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Attachments: none

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